

CLAIMS

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1. An electronics packaging system comprising:
 - a printer to print solder to either land of a printed wiring board;
 - a placing unit to place electronic parts on the lands of the printed wiring board, having the solder printed thereon by the printer; and
 - a reflow unit to heat the printed wiring board on which the electronic parts have been placed by the placing unit and solder the electronic parts to the printed wiring board;

the printed wiring board being brought by a transfer mechanism, while being held in generally upright position, through the printer, placing unit and reflow unit in this order.
 2. The system according to claim 1, wherein:
 - land-position information is generated by a detecting mechanism provided in the printer before solder is printed by the printer on the lands of the printed wiring board; and
 - the placing unit places the electronic part on the printed wiring board on the basis of the land-position information.
 3. In an electronics packaging system, an electronic-part placing unit comprising:
 - transfer mechanisms to carry a printed wiring board while keeping it in

generally upright position;

a part holding mechanism to hold, by suction, an electronic part supplied from a part feeder;

a turning mechanism to shuttle the part holding mechanism between a first position in which the electronic part supplied from the part feeder is held by suction and a second position where it is opposite to the printed wiring board supported by the transfer mechanisms; and

a guide mechanism including first and second guide members to guide the up-down movement of the part holding mechanism in the second position;

when the part holding mechanism has been elevated to the second guide member, the second guide member has been moved to the printed wiring board held by the transfer mechanisms and the part holding mechanism places the electronic part on the printed wiring board.

4. The electronic-part placing unit according to claim 3, wherein:

the turning mechanism includes a rack disposed along the direction in which the part holding mechanism is moved up and down, and a gear provided integrally with the part holding mechanism and engaged with the rack; and

as the part holding mechanism is moved up and down, the gear in mesh with the rack is rotated to shuttle the part holding mechanism between the first and second positions.

5. The electronic-part placing unit according to claim 3, wherein:

there is provided in a position opposite to the part holding mechanism staying in the second position a detector to detect the held state of the electronic part held by the part holding mechanism, the part holding mechanism including an adjusting mechanism rotatable about a direction perpendicular to the up-down moving direction of the part holding mechanism to adjust the held state of the electronic part.

6. The electronic-part placing unit according to claim 3, juxtaposed with the transfer mechanisms and positioned by engagement with a positioning unit provided on a base plate.

7. The electronic-part placing mechanism according to claim 6, for placing an electronic part in a position downstream of the transfer mechanisms while placing an electronic part in a position contiguous to the downstream position and upstream of the transfer mechanisms.

8. In an electronics packaging system, a printer comprising:

a transfer mechanism to carry a printed wiring board while keeping it in generally upright position;

a pair of screen mechanisms each including a screen disposed opposite to the printed wiring board supported by the transfer mechanism movably towards and away from the printed wiring board;

a squeegee mechanism disposed correspondingly to each screen mechanism to be slid by the screen and squeeze ink to the printed wiring board as the screen is moved towards the printed wiring board; and

a driving mechanism to move the screen mechanisms so as to slide the squeegee mechanism.

9. The printer according to claim 8, wherein the ink is cream solder.
10. The printer according to claim 8, wherein the driving mechanism includes:
 - a single drive motor;
 - a driving force transmission to transmit the force from the drive motor; and
 - a moving member to move the squeegee mechanism by means of the driving force transmission when the drive motor is in operation.
11. The printer according to claim 8, wherein:
 - the transfer mechanism include a pair of guide rails to support the printed wiring board at the edges being in parallel to the direction in which the printed wiring board is to be carried;
 - each of the guide rails including a pair of engaging and support plates disposed opposite to each other to support, by engagement, the edges of the printed wiring board; and
 - each of the engagement and support plates has a thickness with which it is deflected into close contact with the printed wiring board when the screen is pressed by the squeegee.
12. The printer according to claim 8, wherein there is provided near the end of the squeegee an auxiliary arm to roll the ink when the squeegee makes the screen slide.
13. The printer according to claim 8, further including a detector to detect a

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position detection mark provided on the printed wiring board and thus detect the posture of the printed wiring board supported on the guide rails.

14. The printer according to claim 13, further including an adjusting mechanism to correct the posture of the printed wiring board supported on the guide rails.

15. In an electronics packaging system, a reflow unit comprising:

a transfer mechanism to carry a printed wiring board having cream solder printed on lands thereof while keeping it in generally upright position;

a reflow furnace to heat the printed wiring board supported by the transfer mechanism and thus melt the cream solder printed on the lands;

a first heating mechanism provided in the reflow furnace to face one main side of the printed wiring board supported by the transfer mechanism;

a second heating mechanism provided in the reflow furnace to face the other main side of the printed wiring board supported by the transfer mechanism; and

a third heating mechanism provided in the reflow furnace to heat, for below, the printed wiring board supported by the transfer mechanism.

16. The reflow unit according to claim 15, wherein the reflow furnace has heat storage plates to enclose the printed wiring board supported by the transfer mechanism, each of the heat storage plates having a plurality of holes formed therein.

17. The reflow unit according to claim 15, wherein the reflow furnace has an exhaust hood provided thereon to exhaust air from the reflow furnace through the exhaust hood.

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